Statistical modelling for integrative analysis of multi-omics data

Chaturvedi, N.

2019

document version
Publisher's PDF, also known as Version of record

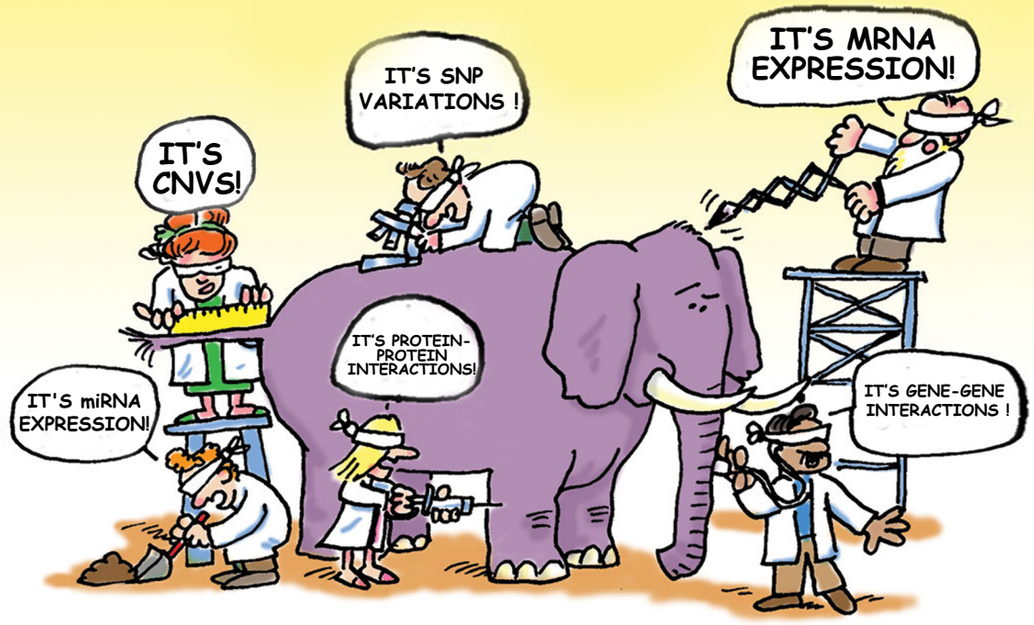
STATISTICAL MODELLING FOR INTEGRATIVE ANALYSIS OF MULTI-OMICS DATA

The Parable of the Elephant and the Blind Men is a well-known Indian fable. It tells the story of six blind men who try to conceptualize what an elephant looks like by touching different parts of its body and hence drawing different conclusions, ranging from a fan (its ears) to a tree (its legs). Analogous to the elephant in this tale is the genome, and its involvement in complex biological processes that regulates various aspects of our bodies, such as chronic disease outcomes. Today, with dramatic improvement of genomic technologies, it has become possible to obtain genetic data on different molecular levels of the cell. However, similar to different body parts of an elephant, each of these distinct datasets provide a partial view of the whole genome and its involvement in the biological processes. Therefore, in order to draw a more comprehensive view of the functioning of genes, proteins and other aspects of the genome, it is essential to make the systematic integrated analysis of biological datasets an important part of genomics. This thesis presents novel statistical methodologies for analysing high dimensional genomic datasets, while focusing on developing integration techniques for studying interactions among biological variations at different genomic levels.

STATISTICAL MODELLING FOR INTEGRATIVE ANALYSIS OF MULTI-OMICS DATA

NIMISHA CHATURVEDI

STATISTICAL MODELLING FOR INTEGRATIVE ANALYSIS OF MULTI-OMICS DATA



NIMISHA CHATURVEDI